

WHAT IS CLAIMED IS:

1. A flexible cannula, comprising:
a proximal portion; and
a distal portion which comprises a spiral cut along a longitudinal axis of the cannula, wherein the cannula forms a continuum of material.
2. The flexible cannula of Claim 1, wherein the spiral cut is taken at about sixty to about eighty degrees from the longitudinal axis of the cannula, and is about 0.001 to about 0.002 inches (about 0.25 to about 0.5 mm) wide.
3. The flexible cannula of Claim 1, wherein the cannula and the continuum further comprise a grasping portion.
4. The flexible cannula of Claim 1, wherein the cannula and the continuum further comprise a grasping portion and an intermediate portion between the grasping portion and the distal portion.
5. The flexible cannula of Claim 1, wherein the cannula and the continuum further comprise an intermediate portion about 0.5 inches long to about 2 inches (about 13 mm to about 51 mm) long, proximal to the distal portion, having a spiral cut with a pitch less than a pitch of the distal portion.
6. The flexible cannula of Claim 1, wherein an outer diameter of the cannula is from about 0.022 inches (0.56 mm, 1.7 Fr) to about 0.034 inches (0.86 mm, 2.6 Fr).
7. A grasper comprising the flexible cannula of Claim 1 and a grasper portion at a distal end of the grasper, the grasper portion forming a continuum with the flexible cannula, and also comprising a sheath enclosing at least a portion of the flexible cannula.

8. The flexible cannula of Claim 1, further comprising a device at a distal end of the cannula for removing material, the device selected from the group consisting of a blade, a slicing-type blade, a slicing-type blade and a separate barbed stylet through a center of the cannula, a helix, and a helical catcher/extractor, wherein the cannula and the device for removing material form a continuum.

9. A laser grasper, comprising the flexible cannula of Claim 1 and a grasper portion at a distal end of the grasper, the grasper and cannula forming a continuum, and also comprising a laser fiber within the cannula.

10. A ureteroscope comprising an optical fiber, an irrigation system, and a flexible cannula according to Claim 1.

11. A combination of the flexible cannula of Claim 1 and a grasper, wherein the grasper is not a part of the continuum.

12. The flexible cannula of Claim 1, wherein the cannula comprises a material selected from the group consisting of stainless steel, Nitinol, a shape-memory alloy, a polymer, and a polymer composite.

13. A flexible cannula, comprising:
a proximal portion;
a distal portion which comprises a spiral cut, wherein the spiral cut is taken at an angle of from about sixty degrees to about eighty degrees from a longitudinal axis of the cannula, wherein the proximal portion and the distal portion comprise a continuum of metal; and
a first intermediate portion between the proximal portion and the distal portion.

14. The flexible cannula of Claim 13, wherein the spiral cut is about 0.001 to 0.002 inches wide.

15. The flexible cannula of Claim 13, wherein the proximal portion is from about 3 feet long to about 5 feet long and a portion with a spiral cut is from about 2 inches long to about 6 inches long (about 7.5 cm to about 15 cm long).

16. The flexible cannula of Claim 13, wherein the cannula and the continuum further comprise a grasping portion.

17. A grasper comprising the flexible cannula of Claim 13 and a grasper portion at a distal end of the grasper, the grasper portion forming a continuum with the flexible cannula, and also comprising a sheath enclosing at least a portion of the flexible cannula.

18. A laser grasper, comprising the flexible cannula of Claim 13 and a grasper portion at a distal end of the grasper, the grasper and cannula forming a continuum, and also comprising a laser fiber within the cannula.

19. The flexible cannula of Claim 13, further comprising a second intermediate portion between a portion with a spiral cut and the grasping portion.

20. The flexible cannula of Claim 19, wherein the second intermediate portion has material removed in a spiral cut with a pitch less than a pitch of the distal portion.

21. The flexible cannula of Claim 13, further comprising a device for removing material selected from the group consisting of a blade, a slicing-type blade, a slicing-type blade and a separate barbed stylet through a center of the cannula, a helical catcher/extractor, and a helix.

22. A combination of the flexible cannula of Claim 13 and a grasper, wherein the grasper is not part of the continuum.

23. A method of extracting an object, the method comprising:
placing a grasper near the object;
grasping the object; and
removing the object, wherein the grasper has been made from a
cannula, the cannula having a distal portion which comprises a spiral cut from a
longitudinal axis of the cannula.
24. The method of Claim 23, wherein the grasper is a laser grasper and
further comprising breaking the object into small pieces.
25. The method of Claim 23, wherein the grasper further comprises an
optical device and a irrigation system, and further comprising irrigating and viewing
the object.